In the Claims

1. (Original) A method for inspecting a BGA joint comprising the steps of:

finding a location of the BGA joint;

improving the location using a fine locator;

measuring in a slice image, a plurality of diameters through the BGA joint at predetermined angles; and

applying a rule to compare the measured diameters to an expected diameter.

2. (Original) A method for inspecting a BGA joint as claimed in claim 1, wherein the plurality of diameters are measured at the located center of the BGA joint.

3. (Original) A method for inspecting a BGA joint as claimed in claim 1, wherein the step of finding the location of the BGA joint comprises applying a centroid-based rough locator to the slice image.

4. (Original) A method for inspecting a BGA joint as claimed in claim 1, wherein the fine locator comprises:

applying a plurality of locator windows over the BGA joint;

locating two ball edges within a locator window;

determining a midpoint between the two ball edges.

5. (Original) A method for inspecting a BGA joint as claimed in claim 4, wherein locating two ball edges within a locator window comprises applying a derivative edge finder on either side of the BGA joint.

6. (Original) A method for inspecting a BGA joint as claimed in claim 5, wherein locating two ball edges within the locator window is repeated for each of the plurality of locator windows.

7. (Currently Amended) A method for inspecting a BGA joint ~~as claimed in claim 1,~~ comprising the steps of:

finding a location of the BGA joint;

improving the location using a fine locator;

measuring, in a slice image, a plurality of diameters through the BGA joint at predetermined angles; and

applying a rule to compare the measured diameters to an expected diameter wherein the rule comprises calculating a sum in the form of:

$$\sum_{i=}^{N} (D-d[i])^2$$

where D is the ~~an~~ expected diameter and d[i] are the measured diameters.

8. (Original) A method for inspecting a BGA joint as claimed in claim 7, wherein the rule further comprises comparing the sum to a threshold.

9. (Cancelled).

10. (New) A method for inspecting a BGA joint as claimed in claim 1, wherein the slice image is a synthesized slice image.

11. (New) A method for inspecting a BGA joint as claimed in claim 1, wherein the slice image is an actual slice image.

12. (New) A method for inspecting a BGA joint comprising the steps of:

finding a location of the BGA joint;

improving the location using a fine locator;

measuring, in a slice image, a plurality of diameters through the BGA joint at predetermined angles; and

calculating a deviation using the measured diameters and an expected diameter.

13. (New) A method for inspecting a BGA joint as claimed in claim 12, further comprising the step of comparing the deviation to a threshold.

14. (Original) A method for inspecting a BGA joint as claimed in claim 12, wherein the plurality of diameters are measured at the located center of the BGA joint.

15. (New) A method for inspecting a BGA joint as claimed in claim 12, wherein the step of finding the location of the BGA joint comprises applying a centroid-based rough locator to the slice image.

16. (New) A method for inspecting a BGA joint as claimed in claim 12, wherein the fine locator comprises:

applying a plurality of locator windows over the BGA joint;

locating two ball edges within a locator window;

determining a midpoint between the two ball edges.

17. (New) A method for inspecting a BGA joint as claimed in claim 16, wherein locating two ball edges within the locator window comprises applying a derivative edge finder on either side of the BGA joint.

18. (New) A method for inspecting a BGA joint as claimed in claim 17, wherein locating two ball edges within the locator window is repeated for each of the plurality of locator windows.

19. (New) A method for inspecting a BGA joint as claimed in claim 12, wherein the deviation comprises a sum of the differences between the measured diameters and the expected diameter.

20. (New) A method for inspecting a BGA joint as claimed in claim 19, wherein the deviation comprises a sum in the form of:

$$\sum_{i=}^{N} (D-d[i])^2$$

where D is an expected diameter and d[i] are the measured diameteres.